



Math Conceptition

2023

P5

Question Booklet

問題簿

Time: 50 Minutes

Calculators are NOT permitted.

Instructions:

- 1. DO NOT OPEN THIS QUESTION BOOKLET UNTIL YOU ARE TOLD TO DO SO.**
- 2. If the information printed on your answer sheet is not correct, please inform the invigilator immediately.**
- 3. Please use a pencil and write your answers neatly ONLY on the answer sheet provided. DO NOT write or draw in the circle next to each answer box. No mark will be given if you failed to follow this instruction.**
- 4. Unless otherwise specified, all answers must be in exact value and in its simplest form. Writing the units for the answers is NOT necessary.**
- 5. Rough-work sheets provided will be collected at the end of the contest but they will not be marked.**
- 6. Diagrams in this question booklet are not necessarily drawn to scale.**

限時：50 分鐘

不允許使用計算機。

比賽須知：

- 1. 未宣布開始前，切勿翻閱此問題簿。**
- 2. 請核對答題紙上列出的資料是否與你相符。如有問題，請舉手。**
- 3. 所有答案必須寫在答題紙內，並須用鉛筆作答。請勿填寫或畫花題號後方的圓圈，否則該題答案將會作廢。**
- 4. 除非題目特別表明，所有答案均不需填寫單位，但必須以準確數值及最簡方式表示。**
- 5. 比賽完結時監考員會收回桌上的草稿紙，但草稿紙上所書寫的任何文字或圖表將不獲評閱。**
- 6. 此問題簿的附圖不一定依比例繪成。**

For question 1 to 10, the answers must be expressed in integer or decimal.

由第 1 至 10 題，答案必須以整數或小數表示。

- 1) $252 \times 25 = ?$ [1%]
- 2) $864 \div 32 = ?$ [1%]
- 3) $(492 - 492 \div 12) + 15 = ?$ [1%]
- 4) $(437 - 215 + 526) \div 22 = ?$ [1%]
- 5) $53.2 + 3.98 = ?$ [1%]
- 6) $7.2 - 0.407 = ?$ [1%]
- 7) $95080 \times 0.01 = ?$ [1%]
- 8) $60 \times 0.005 = ?$ [1%]
- 9) $0.85 \times 8.4 = ?$ [1%]
- 10) $1.6 \times 7.5 \times 0.28 = ?$ [1%]

For question 11 to 15, the answers must be expressed in proper fraction, integer or mixed number.

由第 11 至 15 題，答案必須以真分數、整數或帶分數表示。

11) Evaluate $\frac{1}{3} + \frac{5}{6} - \frac{4}{9}$. [1%]

計算 $\frac{1}{3} + \frac{5}{6} - \frac{4}{9}$ 。

12) Evaluate $5\frac{1}{11} \div 16$. [1%]

計算 $5\frac{1}{11} \div 16$ 。

13) Evaluate $2\frac{11}{12} \div 3\frac{15}{16}$. [1%]

計算 $2\frac{11}{12} \div 3\frac{15}{16}$ 。

14) Evaluate $1\frac{17}{25} \times 2\frac{6}{7} \times 1\frac{7}{8}$. [1%]

計算 $1\frac{17}{25} \times 2\frac{6}{7} \times 1\frac{7}{8}$ 。

15) Evaluate $\left(2\frac{3}{5} + 1\frac{3}{4}\right) \times 4\frac{4}{9}$. [1%]

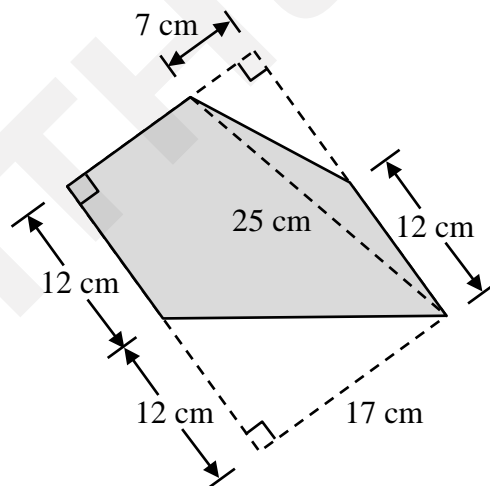
計算 $\left(2\frac{3}{5} + 1\frac{3}{4}\right) \times 4\frac{4}{9}$ 。

- 16) Write down the number “three hundred and seventy million, seven hundred and fifty-four thousand” and round the number to the nearest million. [2%]

寫出數字「三億七千零七十五萬四千」，並把該數字取近似值至百萬位。

- 17) Find the area of the following polygon in cm^2 . [2.1%]

以下多邊形的面積是多少平方厘米？



- 18) In 1980, a lighthouse kept lighting for $\frac{5}{63}$ year. How many hours did it light? [2.2%]

某座燈塔在 1980 年內持續照明了 $\frac{5}{63}$ 年，即照明了多少小時？

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- 19) If the perimeter of a square is $10\frac{2}{3}$ cm, find the area of the square in cm^2 . [2.3%]

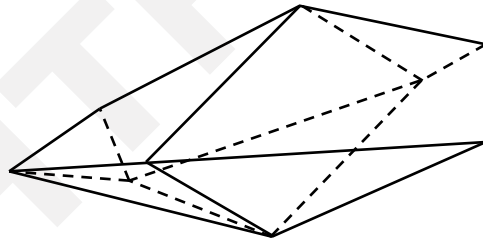
如果某正方形的周界是 $10\frac{2}{3}$ 厘米，其面積是多少平方厘米？

20) If 5 add twice of x equal to 21, then what is $62 - 3x$? [2.4%]

若把 5 加上 x 的兩倍等於 21，則 $62 - 3x$ 是甚麼？

21) How many edges does the following 3-D shape have? [2.5%]

以下立體圖形有多少條稜？



- 22) Jacky weighs 42.6 kg. Johnny weighs 3.8 kg less than Jacky. The weight of their father is 0.85 of the sum of their weights. How many kilograms does their father weigh? [2.6%]

宏俊重 42.6 公斤。宏軒比宏俊輕 3.8 公斤。爸爸的體重是兩人體重之和的 0.85。爸爸的體重是多少公斤？

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- 23) A 3-D shape has 58 edges. Given that it is either a prism or a pyramid, how many vertices does it have? [2.7%]

一個立體圖形有 58 條稜。已知它不是一個角柱就是一個角錐，那麼它有頂多少個？

- 24) A cyclist can ride as far as $157\frac{1}{2}$ km in an hour. How many metres [2.8%]
can he ride in a second on average?

一名單車手在一小時內最快可騎 $157\frac{1}{2}$ 公里。他在一秒內平均
可騎多少米？

- 25) A papaya weighs $\frac{9}{14}$ kg. Ivan buys $\frac{4}{7}$ kg of papaya in the morning, [2.9%]
and he buys $\frac{1}{3}$ of a papaya more in the afternoon. If each kg of
papaya costs $\$15\frac{2}{5}$, how much does Ivan pay in dollars?

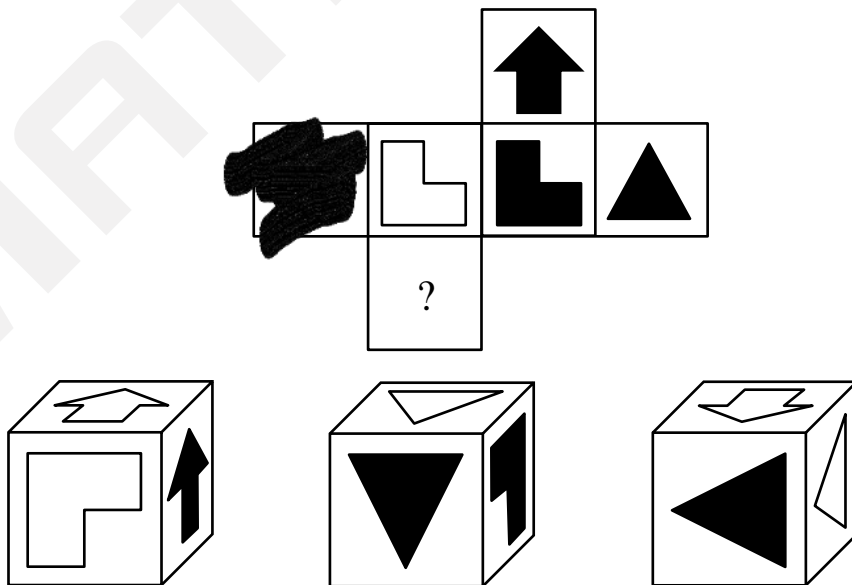
一個木瓜重 $\frac{9}{14}$ 公斤。偉信上午買了 $\frac{4}{7}$ 公斤的木瓜，然後下午
多買 $\frac{1}{3}$ 個木瓜。如果木瓜的售價是每公斤 $15\frac{2}{5}$ 元，偉信需要
付款多少元？

- 26) A cuboid box is 0.7 m long, $\frac{13}{20}$ m wide and 1 m tall. At most how many cubes of side length 4 cm can be placed into the box? [3%]

一個長方體盒子長 0.7 米，闊 $\frac{13}{20}$ 米，高 1 米。盒內最多可放置邊長為 4 厘米的正方體多少個？

- 27) The figure below shows the net of a cube, and the images of the cube viewed from different angles. Draw the shape represented by the question mark. [3.1%]

下圖顯示出某個正方體的摺紙圖樣，與從不同角度觀察該正方體所得的圖像。畫出問號所代表的圖案。

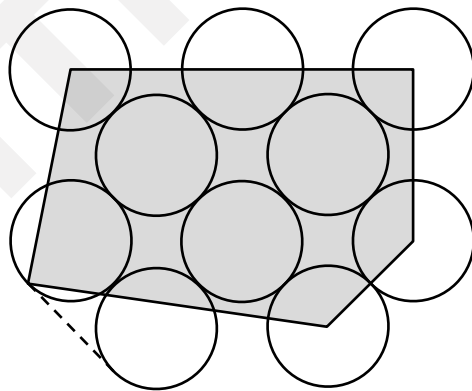


- 28) There are 980 staff in a company. The ratio of the number of male staff to that of female staff is $\frac{24}{25}$. If $\frac{5}{8}$ of the male staff and $\frac{39}{50}$ of the female staff are clerks, how many clerks are there in the company? [3.2%]

某公司有 980 名員工。男員工人數比女員工人數是 $\frac{24}{25}$ 。如果 $\frac{5}{8}$ 的男員工和 $\frac{39}{50}$ 的女員工是文員，公司內共有文員多少名？

- 29) The figure below shows 10 circles with radius 5 cm. Find the area of the shaded region in cm^2 . [3.3%]

下圖是 10 個半徑為 5 厘米的圓。陰影部份的面積是多少平方厘米？



30) If $\frac{1}{1 + \frac{2}{2 + \frac{3}{3 + \frac{4}{4 + \frac{5}{x}}}}} = \frac{49}{83}$, find the value of x . [3.4%]

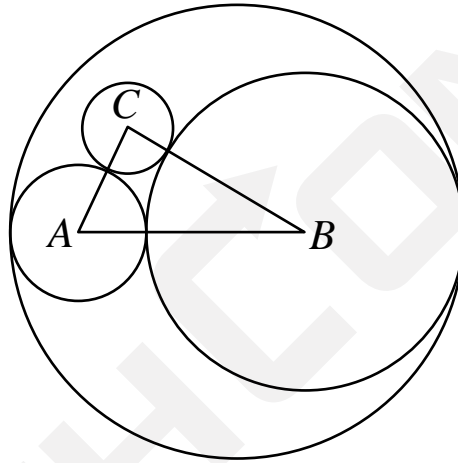
如果 $\frac{1}{1 + \frac{2}{2 + \frac{3}{3 + \frac{4}{4 + \frac{5}{x}}}}} = \frac{49}{83}$ ，求 x 的值。

31) A wooden cuboid is 80 cm long, 65 cm wide and 50 cm tall. A cutting machine can cut a cube of the largest volume from the wood put into. A worker put the cuboid into the machine, and then put the remaining part into the machine twice. The total volume of the three cubes obtained is $x \text{ cm}^3$. Find the largest possible value of x . [4%]

某木製長方體長 80 厘米，闊 65 厘米，高 50 厘米。切割機可把放入的木頭切割出一個體積最大的正方體。工人把長方體放入切割機後，把餘下的部分重複放入切割機兩次。所得的三個正方體的總體積是 x 立方厘米。求 x 的最大可能值。

- 32) In the figure, 3 smaller circles are inside another circle. Their centres are A , B and C respectively. A and B lie on the diameter of the largest circle. The perimeter of triangle ABC is 552 cm. If the length of AB is twice that of AC , and the length of AC is $\frac{5}{9}$ of that of BC , the diameter of the largest circle is ____?____ cm. [4.1%]

圖中，三個較小的圓在另一個圓內。它們的圓心分別為 A 、 B 和 C 。 A 和 B 在最大的圓的直徑上。三角形 ABC 的周界是 552 厘米。如果 AB 的長度是 AC 的兩倍，而 AC 的長度是 BC 的 $\frac{5}{9}$ ，那麼最大的圓的直徑是 ____?____ 厘米。



- 33) 1000 people fill out a survey on their favourite cuisine. 420 people like Canton food, 650 people like Korean food and 220 people like American food. Given that 220 people like both Canton and Korean food, 128 people like both Korean and American food, and 22 people like both American and Canton food. If each person likes at least one cuisine, how many people like Canton, Korean and American food at the same time? [4.2%]

有 1000 名受訪者參與有關喜歡菜式的問卷調查。420 人喜歡廣東菜，650 人喜歡韓國菜，而 220 人喜歡美國菜。已知有 220 人同時喜歡廣東菜和韓國菜，128 人同時喜歡韓國菜和美國菜，且 22 人同時喜歡美國菜和廣東菜。如果每人最少喜歡一款菜式，有多少人同時喜歡廣東菜、韓國菜和美國菜？

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- 34) In the first round of a Reversi competition, there are n candidates. If all candidates are required to play a game with all other candidates, and a total of 990 games are played, what is the value of n ? [4.3%]

在某黑白棋初賽中，有 n 名選手。如果所有選手都需要與其他所有選手下一盤棋，即共下了 990 盤棋， n 的數值是多少？

35) Andy, Betty, and Cindy are playing a game. The rules are as follows: [4.4%]

There are 9 matches. Andy, Betty, and Cindy take turns to remove matches. In each turn, Andy must remove either 1, 2, or 3 matches, while Betty and Cindy must remove either 1 or 2 matches. The one who removes the last match wins.

If Andy and Betty cooperate, how many match(es) should Betty leave after her first turn, to ensure Andy wins? List out all possible answer(s).

小明、小芬和小貝正在進行一場遊戲。規則如下：

有 9 枝火柴。小明、小芬和小貝輪流去拿火柴。小明每次必須拿 1、2 或 3 枝火柴，而小芬和小貝每次必須拿 1 或 2 枝火柴。誰拿最後一枝則獲勝。

如果小明和小芬合作，小芬第一次拿火柴後，要餘下多少枝火柴才能確保小明獲勝？列出所有可能的答案。

36) Find the value of the following expression.

[4.5%]

求以下數式的值。

$$\left(\frac{1}{3} + \frac{1}{15} + \frac{1}{35} + \cdots + \frac{1}{323}\right) \left(1 - \frac{1}{22} - \frac{1}{44} - \frac{1}{88} - \cdots - \frac{1}{11264}\right)$$

37) Arrange the dates in the following pattern.

[4.6%]

把日期按下列的方式排列。

1/1/2021

2/1/2021 3/1/2021

4/1/2021 5/1/2021 6/1/2021

7/1/2021 8/1/2021 9/1/2021 10/1/2021

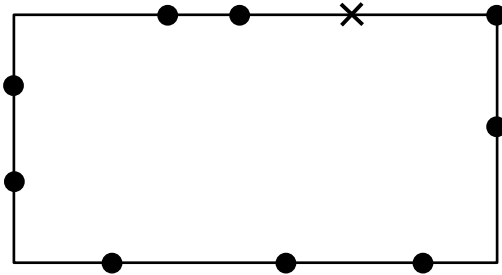
11/1/2021 12/1/2021 13/1/2021 14/1/2021 15/1/2021 ...

If “11/1/2021” is the date under “7/1/2021”, find the date under “19/3/2023”.

如果「11/1/2021」是在「7/1/2021」下方的日期，求在「19/3/2023」下方的日期。

- 38) At most how many quadrilaterals can be drawn on the figure below [4.7%]
by choosing the cross and 3 dots as the angles?

下圖中最多可以畫出多少個以交叉和其中 3 點為四個角的四邊形？



- 39) The sum of a 3-digit number and a 4-digit number is 2003. If all 7 [4.8%]
digits do not repeat, how many combinations are there?

一個三位數與一個四位數之和是 2003。如果 7 個數字並無重複，合共有組合多少個？

- 40) The sum of 4 different positive integers is 4389. In order to have the largest Highest Common Factor, what is the largest number among the 4 numbers? [4.9%]

4 個不同的正整數之和是 4389。為了使它們的最大公因數最大，4 個數中最大的數是甚麼？

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REG NO			P5
NAME			
GRADE			
SEAT			

ANSWER SHEET

IDCHECK

ABSENT

ANSWER		ANSWER		ANSWER		ANSWER	
1	6300	11	$\frac{13}{18}$	21	17	31	179 000
2	27	12	$\frac{7}{22}$	22	69.19	32	460
3	466	13	$\frac{20}{27}$	23	30	33	80
4	34	14	9	24	$43\frac{3}{4} / \frac{175}{4}$ /43.75	34	45
5	57.18	15	$19\frac{1}{3}$	25	$12\frac{1}{10} / \frac{121}{10}$ /12.1(0)	35	4,7
6	6.793	16	371 000 000	26	6800	36	$\frac{441}{1024}$
7	950.8	17	264	27		37	28/4/2023
8	0.3	18	$697\frac{1}{7} / \frac{4880}{7}$	28	690	38	64
9	7.14	19	$7\frac{1}{9} / \frac{64}{9}$	29	575	39	96
10	3.36	20	38	30	$\frac{5}{6}$	40	1995

